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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/726,415

12/03/2003

Eric B. Grann

9381-1

5562

7590

10/06/2006

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EXAMINER

KIM, DAVID S

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/726,415	GRANN ET AL.	
	Examiner	Art Unit	
	David S. Kim	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claims 1-2** are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson (U.S. Patent No. 6,157,477) in view of Grann (U.S. Patent No. 6,201,908) and Butrie et al. (U.S. Patent No. 5,796,899, hereinafter "Butrie").

**Regarding claim 1**, Robinson discloses:

A bi-directional optical transceiver (left side of Fig. 1) for simultaneously transmitting  $n$  channels of  $n$  different wavelengths (col. 3, l. 12-15) and receiving  $m$  channels of  $m$  different wavelengths (col. 3, l. 18-27) through a single fiber optic cable (23 in Fig. 1).

Robinson does not expressly disclose:

The transceiver comprising:

an optical block having a flat upper surface and a flat lower surface,

a reflective coating carried by said upper surface of said optical block,

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a plurality of  $m$  filters carried on said flat lower surface of said optical block, said filters adapted to separately filter said  $m$  different wavelengths,

a plurality of  $m$  photodetectors wherein each of said  $m$  photodetectors is optically aligned with one of said  $m$  filters to receive one of said  $m$  channels through one of said  $m$  filters,

a plurality of  $n$  beam splitters on said flat lower surface of said optical block, and

a plurality of  $n$  transmitting lasers, each having a separate wavelength, wherein each of said  $n$  lasers is optically aligned with one of said  $n$  beam splitters.

However, notice the WDM multiplexer/demultiplexer structure in Grann. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement this WDM multiplexer/demultiplexer structure of Grann in the apparatus of Robinson. One of ordinary skill in the art would have been motivated to do this since Grann's structure provides the suitable details of a WDM multiplexer/demultiplexer for WDM 21 of Robinson. That is, Robinson is relatively silent about the details of WDM 21, and Grann may speak into this silence by providing a structure that is "particularly suited for wavelength division multiplexing systems for the fiber optic data-communications and telecommunications systems" (Grann, col. 1, l. 11-15), and Robinson's apparatus is such a WDM system for fiber optic communications (Robinson, col. 1, l. 5-9 and WDM in Fig. 1).

Accordingly, Robinson in view of Grann discloses:

The transceiver comprising:

an optical block having a flat upper surface and a flat lower surface (Grann, 20 in Fig. 1),

a reflective coating carried by said upper surface of said optical block (Grann, 85 in Fig. 1),

a plurality of  $m$  filters carried on said flat lower surface of said optical block (Grann, 40 in Fig. 1),

and

a plurality of  $m$  photodetectors wherein each of said  $m$  photodetectors is optically aligned with one of said  $m$  filters to receive one of said  $m$  channels through one of said  $m$  filters (Robinson, 19 in Fig. 1; Grann, col. 4, l. 25).

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Robinson in view of Grann still does not expressly disclose:

a plurality of  $n$  beam splitters on said flat lower surface of said optical block, and

a plurality of  $n$  transmitting lasers, each having a separate wavelength, wherein each of said  $n$  lasers is optically aligned with one of said  $n$  beam splitters.

However, beam splitters and lasers are common components in the art, useful to provide a variety of advantageous arrangements. For example, consider the beam splitter and laser in the transceiver of Butrie (beam splitter 50 and laser 30 in Fig. 1). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the transmitting (Robinson, 13 in Fig. 1; Grann, "light source" in col. 3, l. 15) and receiving (Robinson, 19 in Fig. 1; Grann, col. 4, l. 25) elements of Robinson in view of Grann () to incorporate the transceiver teachings of Butrie. One of ordinary skill in the art would have been motivated to do this to provide a fuller bidirectional fiber optic communication system that allows outgoing and incoming signals to have the same wavelength (Butrie, col. 1, l. 13-20). Such a modification implies increased transmission capacity and flexibility in wavelength usage since the apparatus of Robinson in view of Grann only arranged outgoing and incoming signals to have differing wavelengths (Robinson, col. 3, l. 21-23).

**Regarding claim 2**, Robinson in view of Grann and Butrie discloses:

The apparatus of claim 1 wherein  $n$  is 2,  $m$  is 2 (Robinson, 2 transmitters and 2 receivers on the left side of Fig. 1).

Robinson in view of Grann and Butrie does not expressly disclose:

wherein only one transmitter and one photodetector are turned on, thereby creating a built-in redundancy of the transceiver.

However, it is obvious variation to only turn on one transmitter and one photodetector. If one does not require the usage of other transmitters and photodetectors, one simply turns them off for the common motivations of saving power, reducing wear to components, and reducing operating costs. With the extra unused capacity, there is built-in redundancy.

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4. **Claims 3-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson in view of Grann.

**Regarding claim 3**, Robinson discloses:

A bi-directional optical transceiver (left side of Fig. 1) for simultaneously transmitting  $n$  channels of  $n$  different wavelengths (col. 3, l. 12-15) and receiving  $m$  channels of  $m$  different wavelengths (col. 3, l. 18-27) through a single fiber optic cable (23 in Fig. 1), and wherein said  $n$  wavelengths are different from said  $m$  wavelengths (col. 3, l. 21-27).

Robinson does not expressly disclose:

The transceiver comprising:

an optical block having a flat upper surface and a flat lower surface,  
a reflective coating carried by said upper surface of said optical block,  
a plurality of  $m+n$  filters carried on said flat lower surface of said optical block,  
said filters adapted to separately filter said  $m+n$  different wavelengths,  
a plurality of  $m$  photodetectors wherein each of said  $m$  photodetectors is optically aligned with one of said  $m$  filters to receive one of said  $m$  channels through one of said  $m$  filters, and  
a plurality of  $n$  transmitting lasers, each having a separate wavelength, wherein each of said  $n$  lasers is optically aligned with one of said  $n$  filters.

However, notice the WDM multiplexer/demultiplexer structure in Grann. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement this WDM multiplexer/demultiplexer structure of Grann in the apparatus of Robinson. One of ordinary skill in the art would have been motivated to do this since Grann's structure provides the suitable details of a WDM multiplexer/demultiplexer for WDM 21 of Robinson. That is, Robinson is relatively silent about the details of WDM 21, and Grann may speak into this silence by providing a structure that is "particularly suited for wavelength division multiplexing systems for the fiber optic data-communications and telecommunications systems" (Grann, col. 1, l. 11-15), and Robinson's apparatus is such a WDM system for fiber optic communications (Robinson, col. 1, l. 5-9 and WDM in Fig. 1).

Accordingly, Robinson in view of Grann discloses:

The transceiver comprising:

an optical block having a flat upper surface and a flat lower surface (Grann, 20 in Fig. 1),

a reflective coating carried by said upper surface of said optical block (Grann, 85 in Fig. 1),

a plurality of  $m+n$  filters carried on said flat lower surface of said optical block (Grann, 40 in Fig. 1),

said filters adapted to separately filter said  $m+n$  different wavelengths (Grann, note different wavelengths),

a plurality of  $m$  photodetectors wherein each of said  $m$  photodetectors is optically aligned with one of said  $m$  filters to receive one of said  $m$  channels through one of said  $m$  filters (Robinson, 19 in Fig. 1; Grann, col. 4, l. 25), and

a plurality of  $n$  transmitting lasers, each having a separate wavelength, wherein each of said  $n$  lasers is optically aligned with one of said  $n$  filters (Robinson, 13 in Fig. 1; Grann, "light source" in col. 3, l. 15).

**Regarding claim 4**, Robinson in view of Grann discloses:

The apparatus of claim 1 wherein  $n$  is 2 and  $m$  is 2 (Robinson, 2 transmitters and 2 receivers on the left side of Fig. 1).

### **Conclusion**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Carpentier et al. is cited to show another example of a transceiver that employs a beam splitter, a transmitter, and a receiver. Grann et al. '976 is cited to show related structures for transmitting and receiving channels of different wavelengths. Chen et al. is cited to show related structures for transmitting and receiving channels of different wavelengths. Capewell et al. is cited to show related structures for transmitting and receiving channels of different wavelengths. Tatum et al. is cited to show another example of a transceiver that employs a beam splitter, a transmitter, and a receiver.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK



**KENNETH VANDERPUYE**  
**SUPERVISORY PATENT EXAMINER**